

CHAPTER 43-02-05
UNDERGROUND INJECTION CONTROL

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43-02-05-01. Definitions. The terms used throughout this chapter have the same meaning as in chapter 43-02-03 and North Dakota Century Code chapter 38-08 except:

1. "Area of review" means an area encompassing a fixed radius around the injection well, field, or project of not less than one-quarter mile [402.34 meters].
2. "Underground injection" means the subsurface emplacement of fluids:
 - a. Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with wastewaters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.
 - b. For enhanced recovery of oil or natural gas.
 - c. For storage of hydrocarbons which are liquids at standard temperature and pressure.
3. "Underground source of drinking water" means an aquifer or any portion thereof which supplies drinking water for human consumption, or in

which the ground water contains fewer than ten thousand milligrams per liter total dissolved solids and which is not an exempted aquifer.

History: Effective November 1, 1982; amended effective May 1, 1994.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-01.1. Application of rules for underground injection wells. All underground injection wells are also subject to the provisions of chapter 43-02-03 where applicable.

History: Effective July 1, 1996.

General Authority: NDCC 38-08-04

Law Implemented: NDCC 38-08-04

43-02-05-02. Injection into underground source of drinking water prohibited. Underground injection that causes or allows movement of fluid into an underground source of drinking water is prohibited, unless the underground source of drinking water is an exempted aquifer as provided in section 43-02-05-03.

History: Effective November 1, 1982.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-03. Exempted aquifers. An aquifer or a portion thereof which meets the criteria for an underground source of drinking water may be determined by the commission, after notice and hearing, to be an exempted aquifer if it meets the following criteria:

1. It does not currently serve as a source of drinking water; and
2. It cannot now and will not in the future serve as a source of drinking water because:
 - a. It is mineral, hydrocarbon, or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for an underground injection permit to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible; or
 - b. It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical; or
 - c. It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

3. The total dissolved solids content of the ground water is more than three thousand and less than ten thousand milligrams per liter and it is not reasonably expected to supply a public water system.

History: Effective November 1, 1982; amended effective January 1, 1997.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-04. Permit requirements.

1. No underground injection may be conducted without obtaining a permit from the commission after notice and hearing. The application shall be on a form 14 provided by the commission and shall include at least the following information:
 - a. The name and address of the operator of the injection well.
 - b. The surface and bottom hole location.
 - c. Appropriate geological data on the injection zone and the confining zones including geologic names, lithologic descriptions, thicknesses, and depths.
 - d. The estimated bottom hole fracture pressure of the top confining zone.
 - e. Average and maximum daily rate of fluids to be injected.
 - f. Average and maximum requested surface injection pressure.
 - g. Geologic name and depth to base of the lowermost underground sources of drinking water which may be affected by the injection.
 - h. Existing or proposed casing, tubing, and packer data.
 - i. A plat depicting the area of review, (one-quarter-mile [402.34-meter] radius) and detailing the location, well name, and operator of all wells in the area of review. The plat should include all injection wells, producing wells, plugged wells, abandoned wells, drilling wells, dry holes, and water wells. The plat should also depict faults, if known or suspected.
 - j. The need for corrective action on wells penetrating the injection zone in the area of review.
 - k. Proposed injection program.
 - l. Quantitative analysis from a state-certified laboratory of freshwater from the two nearest freshwater wells within a one-mile

[1.61-kilometer] radius. Location of the wells by quarter-quarter, section, township, and range must also be submitted. This requirement may be waived by the director in certain instances.

- m. Quantitative analysis from a state-certified laboratory of a representative sample of water to be injected. A compatibility analysis with the receiving formation may also be required.
 - n. List identifying all source wells or sources of injectate.
 - o. A legal description of the land ownership within the area of review.
 - p. An affidavit of mailing certifying that all landowners within the area of review have been notified of the proposed injection well. If the proposed injection well is within an area permit authorized by a commission order, the notice shall inform the landowners within the area of review that comments or objections may be submitted to the commission within thirty days. If the proposed injection well is not within an area permit authorized by a commission order, the notice shall inform the landowners within the area of review that a hearing will be held at which comments or objections may be directed to the commission. A copy of the letter sent to each landowner must be attached to the affidavit.
 - q. All logging and testing data on the well which has not been previously submitted.
 - r. Schematic drawings of the injection system, including current well bore construction and proposed well bore and surface facility construction.
 - s. Sundry notice detailing the proposed procedure.
- 2. Permits may contain such terms and conditions as the commission deems necessary.
 - 3. Any permit issued under this section may be revoked by the commission after notice and hearing if the permittee fails to comply with the terms and conditions of the permit or any applicable rule or statute.
 - 4. Before a permit for underground injection will be issued, the applicant must satisfy the commission that the proposed injection well will not endanger any underground source of drinking water.
 - 5. No person shall commence construction of an underground injection well without prior approval of the director.
 - 6. Permits are transferable only with approval of the commission.

7. Permits may be modified by the commission.
8. Before injection commences in an underground injection well, the applicant must complete any needed corrective action on wells penetrating the injection zone in the area of review.
9. All injection wells permitted before November 1, 1982, shall be deemed to have a permit for purposes of this section; however, all such prior permitted wells are subject to all other requirements of this chapter.
10. A permit shall automatically expire one year after the date it was issued, unless operations have commenced to complete the well as an injection well.
11. If the permitted injection zone is plugged and abandoned, the permit shall expire and be of no further force and effect.

History: Effective November 1, 1982; amended effective May 1, 1992; May 1, 1994; July 1, 1996; May 1, 2004; January 1, 2006.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-05. Siting. All new injection wells shall be sited in such a fashion that they inject into a formation which has confining zones that are free of known open faults or fractures within the area of review.

History: Effective November 1, 1982.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-06. Construction requirements.

1. All injection wells shall be cased and cemented to prevent movement of fluids into or between underground sources of drinking water or into an unauthorized zone. The casing and cement used in construction of each new injection well shall be designed for the life expectancy of the well. In determining and specifying casing and cementing requirements, all of the following factors shall be considered:
 - a. Depth to the injection zone.
 - b. Depth to the bottom of all underground sources of drinking water.
 - c. Estimated maximum and average injection pressures.
 - d. Fluid pressure.
 - e. Estimated fracture pressure.

- f. Physical and chemical characteristics of the injection zone.
- 2. Appropriate logs and other tests shall be conducted during the drilling and construction of injection wells. Any well drilled or converted to an injection well shall have a log run from which the quality of the cement bond can be determined. Cement bond logs shall contain at least the following elements: a gamma ray curve; a casing collar locator curve; a transit time curve; an amplitude curve; and a variable density curve. A descriptive report interpreting the results of these logs and tests shall be prepared by a qualified log analyst and submitted to the commission if deemed necessary by the director.
- 3. All injection wells must be equipped with tubing and packer set at a depth approved by the director.

History: Effective November 1, 1982; amended effective May 1, 1992; July 1, 1996; May 1, 2004; January 1, 2006.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-07. Mechanical integrity.

- 1. Prior to commencing operations, the operator of a new injection well must demonstrate the mechanical integrity of the well. All existing injection wells must demonstrate continual mechanical integrity and be tested at least once every five years. An injection well has mechanical integrity if:
 - a. There is no significant leak in the casing, tubing, or packer; and
 - b. There is no significant fluid movement into an underground source of drinking water or an unauthorized zone through vertical channels adjacent to the injection bore.
- 2. One of the following methods must be used to evaluate the absence of significant leaks:
 - a. Pressure test with liquid or gas.
 - b. Monitoring of positive annulus pressure following a valid pressure test.
 - c. Radioactive tracer survey.
- 3. One of the following methods must be used to establish the absence of significant fluid movement:

- a. A log from which cement can be determined or well records demonstrating the presence of adequate cement to prevent such migration.
- b. Radioactive tracer survey, temperature log, or noise log.

History: Effective November 1, 1982; amended effective May 1, 1990; July 1, 1996; May 1, 2004.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-08. Plugging of injection wells. The proper plugging of an injection well requires the well be plugged with cement or other types of plugs, or both, in a manner which will not allow movement of fluids into an underground source of drinking water. The operator shall file a notice of intention to plug (form 4) with the oil and gas division of the industrial commission and shall obtain the director's approval of the plugging method prior to the commencement of plugging operations.

History: Effective November 1, 1982; amended effective May 1, 1992; May 1, 1994.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-09. Operating requirements. Injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fracture or propagate existing fractures in the confining zone adjacent to the freshwater resource. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water.

Annular injection of fluids is prohibited.

History: Effective November 1, 1982; amended effective May 1, 1992.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-10. Corrective action. If any monitoring indicates the movement of injection or formation fluids into underground sources of drinking water, the commission shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting as are necessary to prevent such movement.

History: Effective November 1, 1982.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-11. Bonding requirements. All injection wells, except commercial injection wells, must be bonded as provided in section 43-02-03-15. A commercial injection well is one that only receives fluids produced from wells operated by a person other than the principal on the bond. Each commercial injection well must be bonded at the single well bond rate as provided in section 43-02-03-15.

History: Effective November 1, 1982; amended effective May 1, 1992; July 1, 2002.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-12. Reporting and monitoring requirements.

1. The operator of an injection well shall meter or use an approved method to keep records and shall report monthly to the industrial commission, oil and gas division, the volume and nature, i.e., produced water, makeup water, etc., of the fluid injected, the injection pressure, and such other information as the commission may require. The operator of each injection well shall, on or before the fifth day of the second month succeeding the month in which the well is capable of injection, file with the director a sworn statement showing the amount of injection by each well upon forms furnished therefor, or approved computer sheets. The operator shall retain all records required by the industrial commission for at least six years.
2. Immediately upon the commencement or recommencement of injection, the operator shall notify the oil and gas division of the injection date.
3. The operator shall place accurate gauges on the tubing and the tubing-casing annulus. Accurate gauges shall also be placed on any other annuluses deemed necessary by the director.
4. The operator of an injection well shall keep the well and injection system under continuing surveillance and conduct such monitoring and sampling as the commission may require.
5. The operator of an injection well shall report any noncompliance with regulations or permit conditions to the director orally within twenty-four hours followed by a written explanation within five days. The operator shall cease injection operations if so directed by the director.
6. Within ten days after the discontinuance of injection operations, the operator shall notify the oil and gas division of the date of such discontinuance and the reason therefor.
7. Upon the completion or recompletion of an injection well or the completion of any remedial work or attempted remedial work such as plugging back, deepening, acidizing, shooting, formation fracturing,

squeezing operations, setting liner, perforating, reperforating, tubing repairs, packer repairs, casing repairs, or other similar operations not specifically covered herein, a report on the operation shall be filed on a form 4 sundry notice with the director within thirty days. The report shall present a detailed account of all work done, including the reason for the work, the date of such work, the shots per foot and size and depth of perforations, the quantity of sand, crude, chemical, or other materials employed in the operation, the size and type of tubing, the type and location of packer, the result of the packer pressure test, and any other pertinent information or operations which affect the status of the well and are not specifically covered herein.

History: Effective November 1, 1982; amended effective May 1, 1992; May 1, 1994; July 1, 1996; May 1, 2004.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-13. Access to records. The industrial commission and the commission's authorized agents shall have access to all injection well records wherever located. All owners, operators, drilling contractors, drillers, service companies, or other persons engaged in drilling, completing, operating, or servicing injection wells shall permit the industrial commission, or its authorized agents, to come upon any lease, property, well, or drilling rig operated or controlled by them, complying with state safety rules and to inspect the records and operation of wells and to conduct sampling and testing. Any information so obtained shall be public information. If requested, copies of injection well records must be filed with the commission.

History: Effective November 1, 1982; amended effective May 1, 1992; May 1, 1994.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)

43-02-05-13.1. Books and records to be kept to substantiate reports. All owners, operators, drilling contractors, drillers, service companies, or other persons engaged in drilling, completing, operating, or servicing injection wells shall make and keep appropriate books and records for a period of not less than six years, covering their operations in North Dakota from which they may be able to make and substantiate the reports required by this chapter.

History: Effective September 1, 2000.

General Authority: NDCC 38-08-04

Law Implemented: NDCC 38-08-04

43-02-05-14. Area permits.

1. The commission, after notice and hearing, may issue an area permit providing for the permitting of individual injection wells if the proposed injection wells are:

- a. Within the same field, facility site, reservoir, project, or similar unit in the same state;
 - b. Of similar construction;
 - c. Of the same class; and
 - d. Operated by a single owner or operator.
2. An area permit application shall include at least the following information:
- a. The name and address of the operator.
 - b. A plat depicting the area permit and one-quarter mile [402.34 meters] adjacent detailing the location of all anticipated injection wells and all current producing wells, plugged wells, abandoned wells, drilling wells, dry holes, and water wells. The plat should also depict faults if known or suspected.
 - c. Appropriate geological data on the injection zone and the confining zones, including geologic names, lithologic descriptions, thicknesses, and depths.
 - d. Estimated fracture pressure of the top confining zone.
 - e. Estimated maximum injection pressure.
 - f. Geologic name and depth to base of the lowermost underground source of drinking water which may be affected by the injection.
 - g. Proposed injection program.
 - h. List identifying all source wells or sources of injectate.
 - i. Quantitative analysis from a state-certified laboratory of a representative sample of water to be injected. A compatibility analysis with the receiving formation may also be required.
 - j. Legal description of the land ownership within and one-quarter mile [402.34 meters] adjacent to the proposed area permit.
 - k. Affidavit of mailing certifying that all landowners have been notified.
 - l. Representative example of landowner letter sent.
 - m. Schematic of the proposed injection system.

- n. Schematic drawing of a typical proposed injection well bore construction.
3. An area permit authorizes the director to approve individual injection well permit applications within the permitted area. The application shall be on a form 14 provided by the commission and shall include at least the following information:
- a. The name and address of the operator of the injection well.
 - b. The surface and bottom hole location.
 - c. Average and maximum daily rate of fluids to be injected.
 - d. Existing or proposed casing, tubing, and packer data.
 - e. A plat depicting the area of review (one-quarter-mile [402.34-meter] radius) and detailing the location, well name, and operator of all wells in the area of review. The plat should include all injection wells, producing wells, plugged wells, abandoned wells, drilling wells, dry holes, and water wells. The plat should also depict faults if known or suspected.
 - f. The need for corrective action on wells penetrating the injection zone in the area of review.
 - g. Location of the two nearest freshwater wells by quarter-quarter, section, township, and range within a one-mile [1.61-kilometer] radius and the dates sampled. A quantitative analysis from a state-certified laboratory of the samples must be submitted with the application or within thirty days of sampling. This requirement may be waived by the director in certain instances.
 - h. All logging and testing data on the well which has not been previously submitted.
 - i. Schematic drawings of the current well bore construction and proposed well bore and surface facility construction.
 - j. Sundry notice detailing the proposed procedure.
4. The director is authorized to approve individual injection well permit applications within an area permit provided:
- a. The additional well meets the area permit criteria.
 - b. The cumulative effects of drilling and operating additional injection wells are acceptable to the director.

5. If the director determines that any additional well does not meet the area permit requirements, the director may modify or terminate the permit or take enforcement action.
6. If the director determines the cumulative effects are unacceptable, the permit may be modified.
7. Area and individual injection well permits may contain such terms and conditions as the commission deems necessary.
8. Any permit issued under this section may be revoked by the commission after notice and hearing if the permittee fails to comply with the terms and conditions of the permit or any applicable rule or statute.
9. Before a permit for underground injection will be issued, the applicant must satisfy the commission that the proposed injection well will not endanger any underground source of drinking water.
10. No person shall commence construction of an underground injection well until the commission has issued a permit for the well.
11. Area and individual injection well permits are transferable only with approval of the commission.
12. Individual injection well permits may be modified by the commission.
13. Before injection commences in an underground injection well, the applicant must complete any needed corrective action on wells penetrating the injection zone in the area of review.
14. Individual injection well permits shall automatically expire one year after the date issued, unless operations have commenced to complete the well as an injection well.
15. If the permitted injection zone is plugged and abandoned, the permit shall expire and be of no further force and effect.

History: Effective November 1, 1982; amended effective May 1, 1992; May 1, 2004; January 1, 2006.

General Authority: NDCC 38-08-04(2)

Law Implemented: NDCC 38-08-04(2)